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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,558	11/26/2002	Kenneth M. Williamson	440571/PALL	6695

23548 7590 05/04/2005
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EXAMINER

KIM, YOON YOUNG

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/088,558

Applicant(s)

WILLIAMSON ET AL.

Examiner

Yoon-Young Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 6-8, 11-12, 14, 18, and 20-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Groeger et al., U.S. Patent No. 5,605,746.

Regarding Claim 1, Groeger discloses a filter element comprising a pleated composite including a filter layer (Fig. 3, #43, 46, or 48-49) having first and second sides, and a first functional drainage layer (#44, 45 or 47) disposed proximate the first side of the filter layer, the functional drainage layer comprising a functional material (#50, 52, and 54) and has a lower edgewise flow resistance than the filter layer (Col. 8, Line 64 – Col 9, Line 5). The drainage layer has an inherent lower edgewise flow resistance than the filter layer due to the density of the fibers allowing fluid to pass more easily through the drainage layer than through the filter layer.

Regarding Claim 6, Groeger discloses that the first functional drainage layer comprises a porous fibrous sheet containing the functional material (#50, 52, and 54).

Regarding Claim 7, Groeger discloses that the first functional drainage layer contacts the filter layer (Fig. 3).

Regarding Claim 8, Groeger discloses that the filter element is cylindrical (Col. 10, Lines 29-31).

Regarding Claim 11, Groeger discloses a filter element comprising a composite of a filter layer (Fig. 3, #43, 46, or 48-49) and a fibrous sheet comprising a functional material (#50, 52, and 54) having a lower edgewise flow resistance than the filter layer (Col. 8, Line 64 – Col 9, Line 5), the composite being spirally wrapped around a hollow center of the filter element (Col. 10, Lines 29-31).

Regarding Claim 12, Groeger discloses a filter element comprising: a composite of first and second drainage layers (#45 and 47) and a filter layer (#46) disposed between the drainage layers, at least one of the drainage layers comprising a functional material (#50, 52, and 54), each layer having a lower edgewise flow resistance than the filter layer (Col. 8, Line 64 – Col 9, Line 5), the composite being spirally wrapped around an axis (Col. 10, Lines 29-31).

Regarding Claim 13, Groeger discloses that both drainage layers comprise a functional material (#50, 52, 54).

Regarding Claim 14, Groeger discloses that the drainage layers comprise fibrous sheets in which particles of the functional material are integrated (Col 5, Line 66 – Col 6, Line 12).

Regarding Claim 18, Groeger discloses a filter element comprising a plurality of filter layers (Fig. 3, #43, 46, and 48-49), a plurality of first drainage layers (#44-45), and a plurality of second drainage layers (#47), each of the filter layers being sandwiched between one of the first drainage layers and one of the second drainage layers, each of the drainage layers having lower edgewise flow resistance than the filter layers (Col. 8, Line 64 – Col 9, Line 5), a plurality of drainage layers comprising functional material (#50, 52, and 54).

Regarding Claim 20, Groeger discloses that each of the drainage layers comprises a functional material (#50, 52, and 54).

Regarding Claim 21, Groeger discloses that each of the filter layers and each of the drainage layers are substantially flat (Fig. 3).

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3. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Maruscak et al., U.S. Patent No. 5,038,775.

Regarding Claim 1, Maruscak discloses a filter element (Fig. 3, #1) comprising a pleated composite including a filter layer (#3) having first and second sides, and a first functional drainage layer (#5) disposed proximate the first side of the filter layer, the first functional drainage layer comprising a functional material (Col. 4, Lines 62-67) and having a lower edgewise flow resistance than the filter layer (Fig. 3).

Regarding Claim 2, Maruscak discloses that the composite has a plurality of pleats, each having first and second legs, the first leg contacting the second leg of the same pleat and the second leg of an adjacent pleat over a substantial portion of the height of the first leg (Figs. 3-4).

Regarding Claim 3, Maruscak discloses that the first functional drainage layer has an edgewise flow resistance at most approximately 50% that of the filter layer (Fig. 3). It is considered inherent of porous drainage layers such as the one depicted which has larger openings than that of the filter layer, that the edgewise flow resistance thereof could be approximately 50% or less, in order to let fluid flow through and into the filter layer adjacent thereto.

4. Claims 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Pierrard et al., U.S. Patent No. 4,816,150.

Regarding Claim 18, Pierrard discloses a filter element comprising a plurality of filter layers (Fig. 3, #1), a plurality of first drainage layers (#2), and a plurality of second drainage layers (#2), each of the filter layers being sandwiched between one of the first drainage layers and one of the second drainage layers, each of the drainage layers having lower edgewise flow

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resistance than the filter layers, a plurality of drainage layers comprising functional material (Col. 3, Lines 43-55).

Regarding Claim 19, Pierrard discloses that the drainage layers are sealed off (#3-4) on upstream and downstream sides of the filter element.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 4-5, 9-10, and 22-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stoyell et al., U.S. Patent No. 5,543,047 in view of Groeger et al.

Regarding Claim 1, Stoyell discloses a filter element (Fig. 1, #10) comprising a pleated composite including a filter layer (Fig. 4, #12) having first and second sides, and a first drainage layer (#13 or 14) proximate the first side of the filter layer and having a lower edgewise flow resistance than the filter layer (Col. 5, Lines 44-52). Stoyell does not disclose the drainage layer

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comprising a functional material. Groeger teaches a filter element comprising a pleated composite including a filter layer (Fig. 3, #43, 46, or 48-49) and a first functional drainage layer (#44, 45 or 47) comprising a functional material (#50, 52, and 54) proximate the first side of the filter layer. It would have been obvious to one of ordinary skill in the art to modify Stoyell with the element of Groeger in order to be able to remove undesirable contaminants of the fluid such as mildew and mildew odors, and to protect against biological warfare (Col. 6, Lines 3-8).

Regarding Claim 4, Stoyell discloses that the first leg contacts the second leg of the same pleat and the second leg of an adjoining pleat over a substantially continuous region extending for a substantial portion of the height of the first leg and over at least 50 percent of an axial length of the filter element (Fig. 1).

Regarding Claim 5, Stoyell discloses that the pleated filter element (#10) includes a second drainage layer (#14) disposed on the second side of the filter layer (#12) and also having a lower edgewise flow resistance than the filter layer (Col. 5, Lines 44-52). Stoyell does not disclose that the second drainage layer comprising a functional material. Groeger teaches a filter element comprising a pleated composite including a filter layer (Fig. 3, #43, 46, or 48-49) and a first functional drainage layer (#44, 45 or 47) comprising a functional material (#50, 52, and 54) proximate the first side of the filter layer. It would have been obvious to one of ordinary skill in the art to modify Stoyell with the element of Groeger in order to be able to remove undesirable contaminants of the fluid such as mildew and mildew odors, and to protect against biological warfare (Col. 6, Lines 3-8).

Regarding Claim 9, Stoyell discloses that the plurality of pleats (Fig. 3, #11) each have a radially outer end (#11b) displaced in a circumferential direction of the filter element with respect to a radially inner end (#11c) of the pleat.

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Regarding Claim 10, Stoyell discloses that the pleats are substantially parallel to each other (Figs. 1-3).

Regarding Claim 22, Stoyell discloses a method of treating a fluid comprising: passing a fluid through a filter layer and edgewise through a drainage layer on a first side of the filter layer of a pleated filter composite to filter the fluid in the filter layer (Col. 5, Lines 2-8). Stoyell does not disclose the drainage layer comprising a functional material. Groeger teaches a method of treating a fluid including passing the fluid through a filter element comprising a pleated composite including a filter layer and a first functional drainage layer comprising a functional material (Col. 1, Lines 16-27). It would have been obvious to one of ordinary skill in the art to modify Stoyell with the method of Groeger in order to be able to remove undesirable contaminants of the fluid such as mildew and mildew odors, and to protect against biological warfare (Col. 6, Lines 3-8).

Regarding Claim 23, Stoyell discloses passing the fluid through a second drainage layer disposed on a second side of the filter layer (Col. 5, Lines 9-19).

Regarding Claim 24, Stoyell discloses passing the fluid in an axial direction of the pleated filter between opposite lengthwise ends thereof (Col. 5, Lines 2-8).

Regarding Claim 25, Stoyell in view of Groeger discloses passing the fluid primarily in an axial direction of the filter element (Stoyell, Col. 5, Lines 44-47) through the first functional drainage layer.

Regarding Claim 26, Stoyell in view of Groeger discloses passing the fluid through the first functional drainage layer primarily along a height direction of the pleats (Col. 5, Lines 2-8).

Regarding Claim 27, Stoyell discloses that the filter element is cylindrical (Fig. 1).

Regarding Claim 28, Stoyell discloses that the pleats are parallel to each other (Figs. 1-3).

Regarding Claim 29, Stoyell discloses a method of filtering a fluid comprising: passing a fluid in an edgewise direction within a first drainage layer disposed on a first side of a filter layer, and passing the fluid through the filter layer to filter the fluid and passing the fluid in an edgewise direction within a second drainage layer on a second side of the filter layer (Col. 5, Lines 2-8), at least one of the drainage layers having a lower edgewise flow resistance than the filter layer (Col. 5, Lines 44-52). Stoyell does not disclose the drainage layer comprising a functional material. Groeger teaches a method of treating a fluid including passing the fluid through a filter element comprising a pleated composite including a filter layer and a first functional drainage layer comprising a functional material (Col. 1, Lines 16-27). It would have been obvious to one of ordinary skill in the art to modify Stoyell with the method of Groeger in order to be able to remove undesirable contaminants of the fluid such as mildew and mildew odors, and to protect against biological warfare (Col. 6, Lines 3-8).

7. Claims 15-17 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin, U.S. Patent No. 3,647,084 in view of Groeger et al.

Regarding Claim 15, Martin discloses a filter element comprising: a support plate (Fig. 2, #24); a filter layer (#10) disposed on the support plate; and a drainage layer (#22) having a lower edgewise flow resistance than the filter layer disposed between the filter layer and the support plate. Martin does not disclose the drainage layer comprising a functional material. Groeger teaches a filter element comprising a pleated composite including a filter layer (Fig. 3, #43, 46, or 48-49) and a first functional drainage layer (#44, 45 or 47) comprising a functional material (#50, 52, and 54) proximate the first side of the filter layer. It would have been obvious to one of ordinary skill in the art to modify Martin with the element of Groeger in order to be able

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to remove undesirable contaminants of the fluid such as mildew and mildew odors, and to protect against biological warfare (Col. 6, Lines 3-8).

Regarding Claim 16, Martin discloses that the support plate has an opening through which fluid can flow between opposite surfaces of the plate (Col. 2, Lines 72-75).

Regarding Claim 17, Martin discloses that the support plate is annular and has an opening at a radial center of the support plate (Fig. 2).

Regarding Claim 30, Martin discloses a method of treating a fluid comprising passing a fluid through a filter layer disposed on a support member (Col. 2, Lines 5-20). Martin does not disclose the drainage layer comprising a functional material. Groeger teaches a method of treating a fluid including passing the fluid through a filter element comprising a pleated composite including a filter layer and a first functional drainage layer comprising a functional material (Col. 1, Lines 16-27). It would have been obvious to one of ordinary skill in the art to modify Martin with the method of Groeger in order to be able to remove undesirable contaminants of the fluid such as mildew and mildew odors, and to protect against biological warfare (Col. 6, Lines 3-8).

Regarding Claim 31, Martin in view of Groeger discloses passing the fluid through the filter layer before passing the fluid through the functional drainage layer (Martin, Col. 2, Lines 5-20).

Regarding Claim 32, Martin discloses that the support member comprises an annular plate having an opening at the center thereof (Fig. 2), the method including passing the fluid through the drainage layer in a radial direction of the plate (Martin, Col. 2, Lines 5-20).

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Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yoon-Young Kim whose telephone number is (571) 272-2240. The examiner can normally be reached on 8:30-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker can be reached on (571) 272-1151. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YK
04/20/05


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